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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,281	04/22/2004	Brian Peter Arnese	839-1549	7255

30024 7590 04/17/2007  
NIXON & VANDERHYE P.C.  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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ZIMMERMAN, JOHN J

ART UNIT	PAPER NUMBER
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1775

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/17/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/829,281

Applicant(s)

ARNESS ET AL.

Examiner

John J. Zimmerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 4-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/22/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 20051004, 20060807.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **FIRST OFFICE ACTION**

### ***Election/Restrictions***

1. This First Office Action is in response to the correspondence titled "RESPONSE TO RESTRICTION REQUIREMENT" received January 18, 2007. Claims 1-3 of Group I were elected without traverse. Claims 4-10 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

### ***Information Disclosure Statement***

2. The "INFORMATION DISCLOSURE STATEMENT" received October 4, 2005 and the "SECOND INFORMATION DISCLOSURE STATEMENT" received August 7, 2006 have been considered. Initialed forms PTO-1449 have been enclosed with this First Office Action.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of the prior art in view of Williams (U.S. Patent 2,657,902), Durgin (GB 2054749 A) and Field (U.S. Patent 4,672,727).

5. Applicant discloses that nozzle airfoils having been constructed with a plurality of radially spaced apertures opening through the trailing edge in combination with radially spaced film cooling holes axially spaced from and adjacent the trailing edge to extend the operating life of the turbine nozzles to nearly twice the previous life (e.g. see "BACKGROUND OF THE INVENTION", paragraph [0002] of the specification). Applicant also discloses that turbine airfoils have been previously repaired by replacing damaged trailing edge portions with a new replacement trailing edge portion wherein coupons which constitute a replacement trailing edge portion for a nozzle airfoil have been welded to the remaining leading and intermediate sections of an airfoil after the damaged trailing edge portions have been removed. Applicant indicates that this description of the prior art differs from the claimed subject matter in that trailing edge coupons have not been utilized to significantly extend the operation life of turbine airfoils since they have lacked the required cooling configurations (e.g. see "BACKGROUND OF THE INVENTION", paragraphs [0003]-[0004] of the specification). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the cooling hole improvements made current extended life nozzle airfoils when repairing damaged nozzle airfoils in order to take advantage of the potential increase in operation life afforded by the inclusion of cooling holes. It must be assumed that one of ordinary skill in the understands that incorporation of current airfoil improvements in prior airfoils which did not originally contain these

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improvements would have a motivational economic benefit in increasing operation life.

Applicant's description of the prior art may differ from the pending claims in that applicant may not describe the use of chamfered walls for welding as prior art. Williams has been cited, however, to show that it is conventional in the welding art to chamfer (bevel) the edges of airfoil components to accommodate welding (e.g. see Figures 2-3; column 3, lines 38-40, 49-60). In view of Williams, it would have been obvious to one of ordinary skill in the art at the time the invention was made chamfer the edges of an airfoil repair coupon to accommodate welding operations to the main airfoil section. Applicant's description of the prior art may also differ from the pending claims in that applicant may not disclose that the use of a plurality of ribs extending between the pressure and suction sides of the coupon. Durgin, however, clearly shows that ribs (pins) are conventionally used between the pressure and suction sides of airfoils to provide mechanical stability as well as induce turbulent flow to maximize cooling effectiveness (e.g. see page 2, lines 55-63; Figure 3). Regarding claim 2, applicant may not disclose that the use of flared holes to facilitate cooling is prior art, but in any event, Field is applied to clearly show that flared cooling holes are conventional configurations in airfoils to maximize cooling (e.g. see Figures 1-16). Regarding claim 3, applicant may not disclose that these limitations are prior art, but in any event, it would have been obvious to one of ordinary skill in the art to optimize the number of openings and film cooling holes for optimum cooling effectiveness in order to extend the life of the airfoil.

6. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of the prior art in view of Jackson (U.S. 2002/0197152), Jackson (U.S. 2003,0082048)

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or Mendham (U.S. Patent 5,269,057) and further in view of Williams (U.S. Patent 2,657,902), Durgin (GB 2054749 A) and Field (U.S. Patent 4,672,727).

7. Applicant discloses that nozzle airfoils having been constructed with a plurality of radially spaced apertures opening through the trailing edge in combination with radially spaced film cooling holes axially spaced from and adjacent the trailing edge to extend the operating life of the turbine nozzles to nearly twice the previous life (e.g. see "BACKGROUND OF THE INVENTION", paragraph [0002] of the specification). Applicant also discloses that turbine airfoils have been previously repaired by replacing damaged trailing edge portions with a new replacement trailing edge portion wherein coupons which constitute a replacement trailing edge portion for a nozzle airfoil have been welded to the remaining leading and intermediate sections of an airfoil after the damaged trailing edge portions have been removed (e.g. see "BACKGROUND OF THE INVENTION", paragraphs [0003]-[0004] of the specification). It would have been obvious to one of ordinary skill in the art at the time the invention was made that prior art cooled airfoils (which are disclosed by applicant to be constructed with a plurality of radially spaced apertures opening through the trailing edge in combination with radially spaced film cooling holes axially spaced from and adjacent the trailing edge) would benefit from being repaired by replacing their damaged trailing edge portions with coupons having the original configuration of the cooled airfoils in order to maintain the increase in operation life afforded by the cooling holes. Evidence that using repair coupons having cooling holes is conventional in the art is shown by Jackson '048 (e.g. Figure 9), Jackson '152 (Figure 6) and Mendham (Figure 7). Applicant's description of the prior art may differ from the pending claims

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in that applicant may not describe the use of chamfered walls for welding as prior art. Williams has been cited, however, to show that it is conventional in the welding art to chamfer (bevel) the edges of airfoil components to accommodate welding (e.g. see Figures 2-3; column 3, lines 38-40, 49-60). In view of Williams, it would have been obvious to one of ordinary skill in the art at the time the invention was made chamfer the edges of an airfoil repair coupon to accommodate welding operations to the main airfoil section. Applicant's description of the prior art may also differ from the pending claims in that applicant may not disclose that the use of a plurality of ribs extending between the pressure and suction sides of the coupon. Durgin, however, clearly shows that ribs (pins) are conventionally used between the pressure and suction sides of airfoils to provide mechanical stability as well as induce turbulent flow to maximize cooling effectiveness (e.g. see page 2, lines 55-63; Figure 3). Regarding claim 2, applicant may not disclose that the use of flared holes to facilitate cooling is prior art, but in any event, Field is applied to clearly show that flared cooling holes are conventional configurations in airfoils to maximize cooling (e.g. see Figures 1-16). Regarding claim 3, applicant may not disclose that these limitations are prior art, but in any event, it would have been obvious to one of ordinary skill in the art to optimize the number of openings and film cooling holes for optimum cooling effectiveness in order to extend the life of the airfoil.

8. Regarding the use of applicant's description of the prior art in a rejection, it is axiomatic that consideration of the prior art cited by the examiner must, of necessity, include consideration of the admitted state of the art found in applicant's specification, *In re Davis*, 305 F.2d 501, 134 USPQ 256 (CCPA 1962); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986).

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Admitted knowledge in the prior art may be used in determining patentability of the claimed subject matter, *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975).

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547.

The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
John J. Zimmerman  
Primary Examiner  
Art Unit 1775

jjz  
April 13, 2007